

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,312	06/08/2001	Christophe Serbutoviez	PHN 16, 199B	9784

24737 7590 11/03/2003

PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
P.O. BOX 3001  
BRIARCLIFF MANOR, NY 10510

EXAMINER
----------

HON, SOW FUN

ART UNIT	PAPER NUMBER
----------	--------------

1772

DATE MAILED: 11/03/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/877,312

Applicant(s)

SERBUTOVIEZ ET AL.

Examiner

Sow-Fun Hon

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/013546.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Response to Amendment***

***Withdrawn Rejections***

1. The U.S.C. 103(a) rejection in Paper # 5 (mailed 06/16/03) of claims 5, 8 over Masayuki has been withdrawn due to Applicant's amendment in Paper # 6 (filed 09/15/03).

***Rejections Repeated***

2. The U.S.C. 103(a) rejection of claims 6-7 over Masayuki in view of Takiguchi et al. has been repeated for the same reasons previously of record in Paper # 5 (mailed 06/16/03).
3. The U.S.C. 103(a) rejection of claim 9 over Masayuki has been repeated for the same reasons previously of record in Paper # 5 (mailed 06/16/03).

***New Rejections***

***Claim Rejections – 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 5, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masayuki in view of Takiguchi et al.

Masayuki has a liquid crystal display which comprises a polymer-dispersed liquid crystal (PDLC) cell. The amount of liquid crystal is 75 % by weight along with a small amount of photoinitiator (photopolymerization initiator) (JP '240, English translation, sections [0015] to [0016]).

The ethoxylated acrylate monomer is taught to be poorly miscible (weak interaction) with the liquid crystal and mixed (used together) with the acrylate (acrylic ester) oligomer taught to be miscible (of good compatibility) with the liquid crystal. An oligomer is a coupling of several identical monomers and thus qualifies as a homolog of the monomer. The mixture of acrylates with liquid crystal is then polymerized under the influence of radiation (radical polymerization by irradiating ultraviolet rays ) (JP '240, English translation, sections [0013] to [0014]).

Masayuki teaches that the liquid crystal display device comprises a polymer-dispersed liquid crystal cell with a TFT or MIM element (JP '240, English translation, section [0021]) which means that there is a matrix of individually drivable rows and columns of electrodes which is required for the individual pixels of the display as well as means for driving these electrodes.

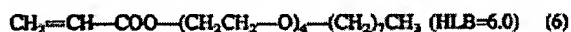
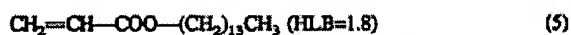
Even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). In the instant case, the end product which is the display device does not depend on the method of production in the absence of a showing of unexpected results due to the method.

Masayuki teaches that the advantage of the mixture of acrylates both miscible and immiscible with the liquid crystal is that it allows for good control of phase separation structure of the polymer dispersed liquid crystal (PDLC) (JP '240, English translation, section [0013]).

Art Unit: 1772

Masayuki fails to teach the specific combination of the miscible acrylate as an ethoxylated alkyl-phenolacrylate whose alkyl group comprises at least five C-atoms and the poorly miscible acrylate as an alkylacrylate whose alkyl group comprises at least 8 and maximally 18 C-atoms.

Takiguchi et al. has a polymer-dispersed liquid crystal composition for a liquid crystal cell in a liquid crystal display device (abstract) and comprises a mixture of two acrylate monomers. The mixture of acrylate monomers (5) and (6) below is given as an example, where each acrylate is present in the amount of at least 20 % (ratio by weight of 1:1 means 50%: 50%)(column 6, lines 1-60):

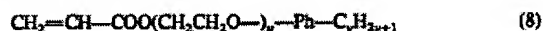


The HLB of the first monomer (5) is 1.8 and the HLB of the second monomer (6) is 6.0. This means that the first monomer (5) is a lot more lipophilic than the second monomer (6), the difference in HLB defining one monomer being miscible or compatible with the liquid crystal and the other monomer being poorly miscible or incompatible with the liquid crystal, depending upon whether the liquid crystal is hydrophilic or lipophilic. The acrylate monomer (6) is a specific member of the family of acrylate monomers of formula (7) below. The ethoxylated alkyl-phenolacrylate family of acrylate monomers of formula (8) is listed as being a suitable one like (7) since they are easily obtained and have low volatility (low vapor pressure). The alkyl group of the ethoxylated alkyl-phenolacrylate comprises at least five C-atoms since v is from 4 to 18.

Art Unit: 1772



wherein p is an integer of 0 to 6; and q is an integer of 8 to 18 when p=0, q is an integer of 6 to 18 when p=1, and q is an integer of 1 to 18, preferably 4 to 18 when p is an integer in the range from 2 to 6.



wherein u is an integer of 0 to 6; and v is an integer of 4 to 18.

The HLB of a specific ethoxylated alkyl-phenolacrylate M4 is 5.2 (columns 15-16, lines 1-30) which is 0.8 HLB units less than monomer (6), but still alot less lipophilic than monomer (5).

Since Takiguchi et al. teaches that the specific mixture of monofunctional acrylate monomers is used in order to better control the characteristics of the obtained liquid crystal/prepolymer composition (column 5, lines 65-70 and column 6, lines 1-15), it would have been obvious to one of ordinary skill in the art to have used the alkylacrylate and ethoxylated alkyl-phenolacrylate of Takiguchi et al. in the mixture of acrylates in the invention of Masayuki in order to obtain a liquid crystal/prepolymer composition with the desired characteristics for the desired liquid crystal cell performance.

### *Response to Arguments*

6. Applicant's arguments with respect to claims 5,8 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's arguments filed 09/15/03 with respect to the valid use of Masayuki (JP '240) and Takiguchi et al. ('497) have been fully considered but they are not persuasive for the reasons set forth below.

Art Unit: 1772

8. Applicant argues that typically an increase in the moles of alkoxylation increases the HLB value of a substance and the miscibility of a substance, and that JP '240 teaches a contrary principle.

Applicant is respectfully reminded that increasing the HLB value increases the polar character of the substance ('497, column 4, lines 5-25), and the miscibility of the substance does not necessarily increase with it since the other substance, the liquid crystal in this case, may be less polar, in which case the miscibility may decrease.

9. Applicant argues that the rejection over JP '240 in view of '497 is based on impermissible hindsight since they contradict each other in that JP '240 uses an ethoxylated acrylate monomer with poor miscibility while '497 uses a similar ethoxylated acrylate monomer with good miscibility.

Applicant is respectfully reminded that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In the instant case, JP '240 and '497 do not contradict each other in that both use a mixture of acrylates in which one is readily miscible and one is poorly miscible with the liquid crystal. The difference between JP '240 and '497 is that JP '240 uses liquid crystal which is poorly miscible with the alkoxyated phenolacrylate while '497 uses liquid crystal which is either poorly miscible or readily miscible with the alkoxyated phenolacrylate as long as the other



Art Unit: 1772

acrylate has an HLB value that balances the average HLB value to within the range within the range from 2.5 to 7.0 ('497, column 6, lines 25-60).

10. Applicant argues that '497 alone teaches away from the use of ethoxylated alkyl-phenolacrylate as a readily miscible monomer in combination with a poorly miscible monomer since '497 teaches that monomers (7) and (8) are a preferred combination wherein both monomers (7) and (8) are readily miscible.

Applicant is respectfully apprised that '497 does not specify that (7) and (8) are readily miscible. Instead, since p is an integer of 0 to 6 in (7) and v is integer of 4 to 18 in (8) ('497, column 6, lines 45-65), it does appear that (8) can have a much longer alkyl tail which would render (8) more hydrophobic and thus have a lower HLB value than (7).

11. Applicant argues that '497 is not concerned with providing a monomer of good miscibility and a monomer of poor miscibility for the final composition of a liquid crystal polymer composition since it is only concerned with a combination of monomer components wherein the range of HLB values for the components result in particular light dispersion properties.

Applicant is respectfully apprised that JP '240 is the primary reference that teaches a mixture of one acrylate miscible with the liquid crystal and one acrylate poorly miscible with the liquid crystal.

12. Applicant argues that '497 is different from JP '240 and therefore not combinable since it requires that the monofunctional polymer mixture be combined with a bifunctional mixture and does not provide a reason to believe that a monofunctional acrylate mixture alone would be useful. Applicant is respectfully apprised that JP '240 does not specify whether or not the

Art Unit: 1772

acrylate which is liquid-crystal compatible is monofunctional or difunctional, and thus can be both.

13. Applicant argues that the required range in '497 for each monomer component covers monomers that have poor miscibility or good miscibility, so long as the final HLB value of the monofunctional component is within the pre-selected range of HLB values such that both monomer components can simultaneously have good miscibility at HLB values of 7 and 11 respectively or poor miscibility at HLB values of 2.5 and 3.5 respectively.

Applicant is respectfully reminded that JP '240 is the primary reference that teaches a mixture of one acrylate miscible with the liquid crystal and one acrylate poorly miscible with the liquid crystal. Furthermore, the secondary reference '497 does teach that the optimal HLB of the acrylate component varies depending on the kind and concentration of liquid crystal ('497, column 4, lines 55-65). It is the examiner's opinion that '497 gave the specific example of a mixture of an acrylate with an HLB value of 1.8 and an acrylate with an HLB of 6.0 in a ratio by weight of 1:1 ('497, column 6, lines 15-50) wherein the difference between the two HLB values is a relatively significant 4.2, because the difference in miscibility provided an advantage for the end-use of the final product. This advantage of using a mixture of two acrylates with a relatively significant difference in miscibility with the liquid crystal is recognized by JP '240 which teaches that the mixture allows for good control of phase separation structure (JP '240, English translation, section [0013]).

Art Unit: 1772

***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (703)308-3265. The examiner can normally be reached Monday to Friday from 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (703)308-4251. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9311.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

SH  
Sow-Fun Hon  
10/28/03

  
HAROLD PYON  
SUPERVISORY PATENT EXAMINER  
1772

10/29/03